LESSON PLAN

Unit 11. COMPUTER FAMILIARIZATION **X-XXX-XXX2 Rev B**

Topic 11.1 Computer Familiarization

CLASS PERIODS: 1
LAB PERIODS: 0

Enabling Objectives:

24.1 **IDENTIFY** the History of Computers in World War II and how it helped the U.S. win the war in accordance with NEETS Module 22, NAVEDTRA B72-22-0088

24.2 **IDENTIFY** uses of Computers in Operating Ships Fire Control/Weapons/Engines in accordance with NEETS Module 22, NAVEDTRA B72-22-0088

24.3 **IDENTIFY** uses and functions of Personal Computers in Today's Navy in accordance with NEETS Module 22, NAVEDTRA B72-22-0088

Trainee Preparation Materials:

A. Trainee Support Materials:

1. None

B. Reference Publications:

1. None

Instructor Preparation:

A. Review Assigned Trainee Material

B. Reference Publications:

1. None

C. Training Materials Required:

1. Transparencies
   a. Automated Track Steering, 11-1-9
   b. Chart Display, 11-1-10
   c. Communications, 11-1-11
   d. Computer Familiarization, 11-1-1
   e. Education CALS, 11-1-13
   f. Education PACE, 11-1-12
   g. Electromechanical Computer, 11-1-5
   h. Electronic Computer, 11-1-6
   i. General Purpose, 11-1-8
   j. Keyboard, 11-1-3
   k. Mechanical Computer, 11-1-4
   l. Rear Admiral Hopper, 11-1-2
   m. Special Purpose, 11-1-7
   n. Summary, 11-1-14

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DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
1. Introduction	1. Establish Contact. Write name on VAP board. Introduce Yourself. The ever increasing need for faster and more efficient computers has created technological advances that can be considered amazing. Ever since humans discovered that it was necessary to count objects, we have been looking for easier ways to do it. The most frequent use of the computer has had applications in the U.S. Navy since World War II. The advantages include speed, accuracy, reliability, and man-power savings. State Lesson Objectives.
2. History of Computers in World War II	2. Show Transparency 11-1-1, Computer Familiarization.
a. Grace Murray Hopper, (1906-1992), Navy Admiral and Computer Pioneer.	a. Show Transparency 11-1-2, Rear Admiral Hopper.

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DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) When the Japanese attacked Pearl Harbor bringing on World War II, Grace wanted to serve her country by joining the military. The obstacles would have deterred a lesser person.	
(a) She was 34 years old, which was considered too old for enlistment, and the government had declared her occupation as a mathematics professor as crucial.	
(b) Navy officials told her that she could best serve the war effort by remaining a civilian.	
(2) Undaunted, she managed to get special permission and a leave of absence from her teaching position at Vassar.	
(3) She also wrangled a waiver on the weight requirement. Weighing in at 105, she was sixteen pounds underweight for her height of five feet six inches.	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(4) Grace persevered and was sworn into the U.S. Navy Reserve in December 1943.	
(5) For 43 years, she proudly served the Navy she loved so dearly.	
(a) During that time, she was responsible for inventing the first computer "compiler" (automatic programming of computer language). She also invented COBOL (the first user-friendly business software program) and the computer keyboard which are still in use today.	(a) Show Transparency 11-1-3, Keyboard.
b. Under the pressure of military needs in WW II, the science of electronic data processing made giant strides forward.	

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DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) In 1944, Harvard University developed a computing system known as the Automatic Sequence Controlled Calculator. After the initial design and construction, several improved models were built.	
(2) Meanwhile, at the University of Pennsylvania, a second system was being developed, completed in 1946, named Electronic Numerical Integrator and Computer (ENIAC).	
c. All modern computers have their basics in these two early developments.	
d. The first computers used by the Navy were mechanical fire control computers, sometimes called analog computers.	d. Show Transparency 11-1-4, Mechanical Computer.
(1) In an analog computer, a continuing input will give a constantly updated output. This was perfect for target information.	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(2) Before analog computers, all gun control on ships was done by line-of-sight. Now the Navy could use these analog computers primarily for gun fire control.	
3. Uses of Computers in Operating Ships	
a. As systems for Naval weapons became more and more complex, the need for a different computer was apparent. The functions that had to be performed had increased the size of the computer to an unreasonable scale.	
b. Electromechanical computers came next and differ from mechanical computers in that they use electrical components to perform some of the calculations and to increase the accuracy.	b. Show Transparency 11-1-5, Electromechanical Computer.
(1) Because the electrical components are smaller than their mechanical counterparts, the size of the computer was reduced, even though it performs more functions.	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(2) These computers were used to perform faster calculations and increase accuracy in gun fire control and missile fire control.	
(3) Even though these computers were better than the mechanical computer, they still had their drawbacks. Of prime importance is that they are "special-purpose" computers.	
(a) This means that they can only be used for one job, dependent of their design characteristics.	
(4) By today's Navy standards, these computers are much too large and the maintenance time for repairs on them is too excessive. The need for a more accurate, reliable, versatile, and, most importantly, a smaller computer was recognized.	
c. Next came electronic computers	c. Show Transparency 11-1-6, Electronic Computer.

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) The weak link in this type of computer was the vacuum tube. Through technological research and development, this computer progressed from tubes to transistors, to miniaturized circuits, to integrated circuitry.	
(2) These advances have made it possible to reduce the size and weight of these computers.	
d. All analog computers are special-purpose computers.	d. Show Transparency 11-1-7, Special Purpose.
(1) The output of an analog computer is often an adjustment to the control of a machine; such as, an adjustment to a valve that controls the flow of steam to a turbine generator or a temperature setting to control the ovens in the ship's galley for baking.	
e. Digital computers are considered general purpose computers because they are designed to perform a wide variety of functions and operations.	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(1) Ideal for administration use such as keeping payroll records, printing paychecks, maintaining supply inventories, and word processing.	(1) Show Transparency 11-1-8, General Purpose.
(2) Since these computers are being used to do lengthy and complicated mathematical calculations millions of times faster than human beings, they are ideal for gun and missile fire control.	
f. Some 20th century uses aboard ships:	
(1) Automated Track Steering	(1) Show Transparency 11-1-9, Automated Track Steering.
(2) Direct Read of Digital Nautical Charts	
(3) Navy Electronic Chart Display Information System	(3) Show Transparency 11-1-10, Chart Display.
(4) Radar Overlay	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(5) Precision Anchoring Display	
(6) Man Overboard Display	
4. Personal Computers	
a. Some of the uses and functions of personal computers in today's Navy are:	
(1) Primarily in the area of administration	
(a) Word processing is among the most common applications for personal computers. The development of documents from letters to printed courses of instruction to Navy rules and regulations (e.g., OPNAVINST, SECNAVINST, etc.).	

DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(b) Maintain military pay records and print paychecks.	
(2) Communications	
(a) Provides the capability for communications in contacting Detailers.	
(b) Also provides the capability for communication with friends and family members while you are deployed.	(b) Show Transparency 11-1-11, Communications.
(3) On the job	
(a) Troubleshooting complex systems such as electronics, propulsion control, and hydraulic systems.	
(4) Some educational/training applications	

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DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
(a) Interactive Courseware (ICW)	
(b) Program for Afloat College Education (PACE)	(b) Show Transparency 11-1-12, Education PACE.
b. DANTES Computer Assisted Learning System (CALS)	b. Show Transparency 11-1-13, Education CALS.
5. Summary	5. Show Transparency 11-1-14, Summary.
a. History of Computers in WW II	
b. Uses of Computers in Operating Ships	
c. Personal Computers	
6. Assignment	

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DISCUSSION POINT	RELATED INSTRUCTOR ACTIVITY
a. None	
7. Evaluation	
a. None	